

MEMORANDUM

January 6, 1992

TO: Asst. Chief Oettinger

FROM: Lieut. Mike Love, Station 16 Commander *MTL*

SUBJECT: Post Incident Analysis – 10201 Grosvenor Lane

As a result of the critique conducted December 10, 1991 and my evaluation of all the information available I have prepared the attached report. I thank you for the opportunity to facilitate the critique as well as to develop this report. I feel I have learned a great deal. I want to thank Sgt. Steve Lohr for the value he brought to this project. Steve went out and reviewed the construction and gathered other information about the physical facility. F3 Katy Matheny helped us by drawing several professional diagrams. Please contact me if you need anything else.

Post Incident Analysis – 10201
Grosvenor Place

#8

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FIRE REPORT: 10201 GROSVENOR LANE, BETHESDA, MARYLAND

The high rise buildings on Rockville Pike between Grosvenor Lane and Tuckerman Lane have experienced the usual frequency of burned food calls, alarm malfunctions and smoke detector activations. However, in the early hours of Tuesday morning, November 20, 1991, the usual would become the unusual. At 0113 hours units were dispatched to 10201 Grosvenor Lane for a fire on the eighth floor, in apartment 814. This fire call would turn out to be a major working fire which required a substantial level of resources and effort to control.

The following is a report of the fire. This report will provide background about the building, describe the fire department's actions, describe the fire and analyze the entire operation.

The units dispatched to this box alarm consisted of the following:

ENGINES	SPECIAL SERVICE	EMS	COMMAND
E201	AT20	A40	DO6 (CHIEF 200)
E261	T26		DUTY6
E231	RS18		RES DUTY 1
E51			RES CH 1-4

ADDITIONAL UNITS CALLED TO ASSIST

ENGINES	SPECIAL SERVICE	EMS	COMMAND
E511	AT23	A14 A24	CH 3-2 DO 5
E71	T5	A12	CH 5 DO 1
E61	T6	M10 M239	CH 5-3
E211	RS28		CH 10-2
E191	T19		CH11
E31	T3		
E181	AT18		
E331	T5		
E101	T11		
E111			
E11			
E301			
E102			
E501			
<u>OTHER APPARATUS</u>			
AIR 1			
AIR 16			
COMMAND BUS			

ABOUT THE BUILDING:

10201 Grosvenor Lane is a 17-story residential high rise. Construction began on this building in 1963 and was completed in 1965. The building was converted from rental units to condominiums in 1978. The side one entrance opens into the building's lobby at grade level on the third floor. There is a two level parking garage which is protected by an automatic sprinkler system. The building forms a large "Y" shape with the lobby and side 1 entrance in the center of the building at the junction where the two wings of the "Y" join. The hallways of the building are 165 feet long. There are 29 units on the eighth (fire) floor. There are a total of 399 units in the building with a population of 750 - 800 residents. Side 2 of the building offers some access to the building, including an entrance. Side 3 of the building provides no access for fire apparatus and side 4 has limited access.

10201 Grosvenor Lane is brick-over-concrete block construction. The composite floors consist of poured concrete and metal deck. Ceilings are constructed of plaster-over-metal lathe and attached to unprotected light weight steel trusses. The interior partitions are plaster-over-metal lathe and are supported by metal studs. The apartments are of compartmented design, and are sealed by two steel, fire-rated, self-closing entrance doors. The entrance doors have a one and one-half hour protection rating; one enters into the main living space and one into the kitchen. Patio doors consist of tempered safety glass. Other windows are ordinary plate glass. The fire apartment had a 668-square foot floor plan.

In addition to the building's fire safe construction, it features the following fire protection systems: Standpipe system supplied by a 500 GPM electric drive fire pump, hard wire smoke detectors in each apartment (not supervised), pressurized water fire extinguishers and local evacuation alarm systems.

IGNITION SCENARIO AND INITIAL ALARM NOTIFICATION

The fire started when a discarded cigarette ignited combustible materials. The occupant of this efficiency apartment advised that he returned home from watching a movie and smoked a cigarette. Before retiring, he believes he extinguished the cigarette in an ash tray which was stored in the drawer of a piece of furniture in a closet-like structure near the bed. The occupant was awakened by the smell of smoke. When he discovered that the drawer was on fire, he removed the drawer, set down in an area

adjacent to the bed and attempted to extinguish the flames. The occupant was unable to extinguish the flames and proceeded to the lobby desk to report the fire.

The clerk at the lobby desk advised that the occupant of apartment 814 approached sometime between 0045 and 0100 hours and informed of a fire in his apartment which he tried but could not extinguish. The desk clerk asked the occupant if he had notified the fire department and the occupant replied no. The desk clerk, then called 9-1-1 and reported the fire. He then called the resident manager, and proceeded to the lobby pull station and initiated the local alarm system for 10201 Grosvenor Place. In the mean time the occupant of apartment 814 returned to the eighth floor.

After being notified by the lobby clerk, the resident manager left her apartment on the twelfth floor and descended the center stairway. As the manager went past the eighth floor on her way to the lobby she smelled a faint odor of smoke at the eighth floor landing. The alarm bells were ringing in the building. When she had arrived in the lobby, the fire department had not yet arrived. The resident manager advises that she met the arriving Fire Department personnel at the door and provided information.

DISPATCH AND RESPONSE TIMES

The Computer Aided Dispatch system (CAD) provided information about the receipt of the alarm and about the initial dispatch. For the incident at 10201 Grosvenor Lane (Incident #91066392) the following information was gained:

1. the initial alarm for help was received on Emergency 9-1-1 at 0112.23 hours.
2. The box alarm units were dispatched by CAD at 0113.07 hours
3. The first due unit - Engine 201 checked on the air at 0113.51.
4. Engine 201 arrived on the scene at 0117.41, a little more than five minutes after the call was received.

CONDITIONS ON ARRIVAL

Engine 201 arrived on the scene at 0117 hours, four minutes after initial dispatch. Engine 201 positioned on side 1 adjacent to the lobby entrance. From their position Engine 201 did not observe any indication of fire. The fire was in Apartment 814 which faced Rockville Pike - Side 3 of the building. The building's physical layout completely obscured the fire's extent. As Engine 201 entered the lobby, the desk clerk indicated the

fire was located in Apartment 814. Engine 201's crew ascended the stairs, experiencing an increasingly strong odor of smoke as they climbed toward the eighth floor. As they neared the eighth floor they met apartment 814's occupant, a male who was covered with soot. The occupant indicated to Engine 201's crew that they had a significant fire facing them and that he had been fighting it. As Engine 201's crew reached the eighth floor, there was smoke pushing around the stairwell door.

Rescue squad 18 responded on the box and was the first unit to report a visual indication of fire. They saw and reported heavy smoke coming from Side 3 of the building. Meanwhile, Rescue Chief 1-4 reported that there was fire showing on Side 3.

INITIAL ACTIONS

ENGINE 201 (E201)

When Engine 201 arrived on the scene the crew (officer and attack line person) entered the building and ascended the center stairwell to the fire floor. Engine 201's operator remained outside and hooked up and supplied the fire department connection to the right of the side 1 entrance. Engine 201 obtained water supply by hand laying a 3" line to a nearby fire hydrant. It was indicated in the critique that the connection supplied by E201, was the sprinkler system for the parking garages.

AERIAL TOWER 20 (AT20)

Aerial Tower 20 positioned on Side 1 behind Engine 201. The crew left the operator to attend to outside work and followed Engine 201 up the center stair well. Two members of AT20's crew remained at the standpipe valve on the seventh floor to assist the attack line person with hook-up and advancement. AT20's officer in charge (OIC) entered the eighth floor behind E201's OIC, visibility was described as being zero.

Engine 261 (E261)

Engine 261 was the second due engine on the box. Since there was no access to side 3, E261 took a position on side 4. From the position on side 4, E261 obtained a water supply and provided water to the building's standpipe system. E261's crew entered the building with their standpipe equipment. Instead of using the

stairs E261 chose to use the elevator where they ascended to the sixth floor. The officer indicated that there was a haze of smoke in the elevator. After exiting the elevator on the sixth floor the crew traveled three more floors, to the ninth floor by foot.

The stairwell was crowded with people exiting the building. On the ninth floor, the floor above the fire, E261's crew observed light to moderate smoke. The building's alarm bells were ringing. E261's crew went to Apartment 914, the fire's vertical exposure and attempted to gain access. The crew could not gain access and they heard the smoke detector sounding. There was no heat observed at the door. E261's officer advised command of the inability to gain entry to the vertical exposure. E261's crew then descended to the fire floor to see if they could assist the initial attack crew.

After entering the smokey eighth floor corridor, E261's officer quickly located the fire apartment since he had reviewed the floor plan of the floor above in a relatively smoke-free environment. The officer observed that the steel entrance door to the apartment was distorted by the heat. Fire was visible through the openings in the distorted door. The smoke completely eliminated visibility. At that point there still was no line to the fire apartment. E261's officer went back toward the stairwell and located E201's crew with the 1-3/4" attack line. E261's attack line person advanced the second attack line toward the fire. The heavy involvement of the fire apartment hampered efforts for the attack crews to enter the fire apartment and extinguish the fire.

TRUCK 26 (T26)

Truck 26 responded as the second due truck on the box. They positioned on Side 2 of the building at Quadrant A to gain access with the aerial ladder on two sides of the building. The operator initially assumed an uncommitted position while the crew entered the building and ascended to the fire floor to initiate search of the eighth floor. In apartment # 802 they found two elderly occupants; one with a fractured hip suffered when the occupant fell trying to escape the smoke. Due to the injury to the elderly occupant of # 802 T26's crew chose to stay with the occupants until they could assure a safer escape. They advised the incident commander of their commitment. T26's aerial ladder was used to bring some people down from the building. It was not said whether the people were in danger in their unit, or if they could have waited it out.

ENGINE 231 (E231)

E231 responded as the third due engine on the box. E231 took proper positioning by supplying E201 on Side 1 of the building. E231's crew of 3 entered the building with a standpipe and high rise pack and used the elevator to ascend to the fire floor. As E231's crew arrived on the fire floor, E201's crew was just donning their facepieces. E231's officer entered the fire floor and assisted with locating the fire while the crew assisted feeding hose. The crew performed many tasks on the fire floor and depleted one 30-minute bottle. E231's officer initiated a request for a flying standpipe through the Side 1 apartment and this line was crucial to final extinguishment of the original fire. One of the crew members indicated that he changed bottles and upon hearing that there was a fire on the ninth floor, went up to the tenth floor landing, and with E231's 2" standpipe hose, hooked up, advanced the hose down the stairs, on to the ninth floor and down to apartment 914, which was now fully involved with fire. This crew member described the flow from the 2" hose as being good power to assist with the fire fighting operations already underway. E51's crew was already fighting fire in the ninth floor apartment fire. The crew member also indicated that it was well after an elapsed time of 40 minutes before the ninth floor fire operations began.

ENGINE 51 (E51)

E51 responded as the fourth due engine on the box. E51's officer chose to have the operator charge and supply the standpipe connection on Side 2 of the building. There was a hydrant nearby, so there was little difficulty in completing the task. The crew (an officer and three fire fighters) entered the building through the lobby with standpipe equipment and ascended the stairwell to the fire floor. The crew was assigned to enter the building wing on Side 2 and assist with evacuation of the fire floor. They removed two occupants. Upon hearing that there was fire now reported on the ninth floor, E51's crew climbed to the ninth floor with the objective of attacking the fire. After connecting their standpipe equipment to the riser outlet on the tenth floor, E51's crew advanced their attack line on the fire in Apartment # 914. E51's crew noted that they encountered moderate to heavy smoke at this point on the ninth floor.

As E51's crew approached the door to Apartment 914, they noticed that it was buckled by the heat. As the crew gained entry to the apartment, flames and gases actively vented over their heads and was impinging on the door across the corridor. After checking the nozzle's stream pattern and bleeding the hose line of air, the crew was about to enter the apartment to attack the fire when, the

occupant across the corridor opened the door thus exposing himself to the extreme heat and gases. The attack crew hurried the occupant back into the apartment and to safety and resumed attacking the fire. The crew fought their way into apartment 914 with their 1 3/4" hose. Shortly into this operation the crew's low pressure alarm on the self-contained breathing apparatus (SCBA) began to operate. E191's crew relieved them, as well as E231's crew.

RESCUE SQUAD 18

Rescue squad 18 responded on the box and was the first unit to report a visual indication of fire. They saw and reported heavy smoke coming from Side 3 of the building.

AMBULANCE 40

A40 arrived on the scene and positioned on Side 1 in the parking lot. They established an aid station.

COMMAND 20

Command was established immediately by Chief 200 on Side 1 of the building.

THE FIRE IN APARTMENT 814 SPREADS VERTICALLY

A video of this fire indicated that fire fully involved the apartment 814. The video showed a post-flashover condition with long, dark flames traveling out the window and up the building at least one story. The occupant of apartment 914, directly over the fire apartment, indicated that when he heard the evacuation alarm sounding, he went over and opened his balcony doors and was immediately hit with smoke and heat. The occupant hastily retreated leaving the door open and thus provided an easy opening for the accumulation of extremely hot and unburned combustion gases from the flash over stage fire raging below. Recall that Engine 261's officer indicated that the smoke detector in Apartment 914 was sounding when he checked the apartment on the floor above the fire floor.

COMMUNICATION BREAKS DOWN

The services of the Emergency Communications Center (ECC) to

those managing a major emergency are vital. Even on the most ordinary incidents ECC functions as an important support system.

ECC is one of those services which you grow accustomed to and likely take for granted until you are without one of their vital features.

Such was the case in the Grosvenor fire. On this major incident two features of the Computer Aided Dispatch (CAD) were lost due to a CAD software bug. The two features included: apparatus status function and Automatic Station Alerting. The loss of status function made it difficult for the Incident Commander to identify the resources which had been dispatched. The CAD features were lost just as the Incident Commander was building the system and resources to control this fire. Apparently, the sudden need of the CAD system to broadcast the ancillary pager tones caused it to be, for lack of a better word, overloaded. The message of the CAD shutdown was relayed to the Incident Commander after he requested a rundown of which units had been dispatched on the second alarm.

ECC advised that as they were setting up the second alarm assignment, the computer went down. This occurred at approximately 0121 hours, seven minutes after initial dispatch of the incident.

It should be noted that the Incident Commander requested a task force at the same time as he requested the second alarm and never received it. This was because ECC upgraded the original task force, for the box, to a second alarm.

The loss of CAD prevented the quick build up of resources which would normally be needed for an incident such as this. The Incident Commander was unable to properly assign sectors in the beginning of the fire because it was difficult to identify who was coming in on the call. The loss of the CAD system presented the Incident Commander with the loss of a major resource of information. The loss of CAD also had a major impact on ECC.

ECC had to conduct its work manually when they were accustomed to having it done electronically. The CAD system is the primary means of choosing and notifying the companies who are required to respond to emergencies throughout the county. In addition to being the central dispatch tool, the CAD keeps track of the activity level and availability of all emergency apparatus in the county.

When this fundamental system was lost, all tracking and dispatch of resources had to be completed manually. Moving from CAD to manual dispatch when the transition is planned, is one thing. Moving to manual dispatch during a major incident is quite another situation. As the second alarm commands were being entered into computer, the computer became overloaded and it then shut down. The accomplishment of tasks in ECC during a major fire require all hands. At the time of the fire there were only three people working. Bear in mind, the fire at Grosvenor was not the only request in the County for emergency services. There were emergencies elsewhere which required dispatch of equipment. Since

the fire occurred early in the morning it required the use of phones to contact stations for additional incoming incidents as well as to set up the additional alarms and transfers required due to the demands of the fire. Add to all of this the fact that the 9-1-1 switchboard was flooded with calls from people living in the fire building as well as from concerned people checking on the situation at the fire. All of these telephone calls had to be answered by dispatchers who would normally staff the radio positions, with many incoming 9-1-1 calls coming in it takes at least two people away from the normal duties of radio operations. ECC is under staffed and is placed under extreme pressure when major emergencies occur. To operate effectively, ECC needs a minimum of five people on duty at all times. Due to the recession the staffing was reduced from a minimum of five to a sub standard staff level of four.

The crash of the CAD system created a difficult barrier for the management of the Grosvenor fire. As it was, lightning struck again a few days later in the same complex of buildings. As ECC was dispatching additional units to a fire at another one of Grosvenor's buildings, the CAD went out again. It was then that the problem was identified and isolated to the CAD software program. Shortly there after the problem was corrected and there has not been any problems since in regard to loss of CAD use.

POST INCIDENT ANALYSIS

On December 10, 1991 a Critique was conducted on the Grosvenor fire at Bethesda Fire Station 6. To provide a frame work for discussion, the Post Incident Analysis (from the Incident Command Policy) was used. The following points were made:

INCIDENT COMMANDER'S COMMENTS

1. I didn't request a 3rd alarm fast enough. Had I seen what Chief 3-2 could see, from the rear of the building, there is no question that I would have requested a 3rd alarm immediately. Fires in the middle of the night in residential occupancies will require massive resources to deal with the people who think they need to be rescued, as well as to extinguish the fire. It was 35 minutes before I asked for a 3rd alarm.

2. I did not develop a large enough command structure. I assigned an interior staging/operations officer and an EMS sector officer early on in the incident. Later I assigned a ventilation sector. I neglected to assign a safety officer. I did not assign a staging officer. I could have better used the command aide as communicator, thus freeing me to deal with other matters.

NOTE: An EMS Sector was assigned very early in the fire. The

officer assigned was an experienced Fire Chief. The fire Chief assigned to the EMS sector should have been assigned to the pressing need of interior operations, as opposed to using a Captain to handle the two important interior sectors. Since there was very few actual EMS emergencies at this incident it was not as important to cover that sector. In addition, there were at least two rescue command officers and a number of other EMS officers who could have assumed the EMS sector.

3. I never assigned anyone to observe the rear of the building. It was 35 minutes into the fire before Chief 3-2 reported that he had this position and reported the rapidly deteriorating conditions in the rear.

4. I did not make available use of site plans to better understand the lay-out of the building. I believe several operations would have gone smoother if I was familiar with the building or had made use of the drawings of the building.

Safety

1. Only two of the seven initial response units had 60-minute masks in use at this fire. To improve respiratory protection for the fire fighter, 60-minute masks must be required for the high rise fire.

2. PASS devices were available to most of the fire fighters but in most cases they were not used. Company officers must make sure that the firefighters in their task unit activate their PASS device prior to entering the hazardous respiratory environment.

3. A Safety Sector was not established by Command. We can correct this problem by making a standard appointment of a duty officer on an extra alarm. The officer should immediately report to the command post, retrieve the Safety Sector Packet, with the Position Activity Card, and begin the duties of Safety Officer. Even though there were no serious injuries the potential was present. This area of Incident Command is frequently ignored.

4. Too many fire/rescue personnel were allowed to linger in the fire area during post-fire activities. The officer placed in charge of post-incident fire floor activities, must keep the area of the fire clear of everyone but essential personnel. All other personnel should be directed to the interior staging area. In this fire there was evidence of structural degradation as presented by spalling concrete. Furthermore, the area had not yet been determined safe for loading.

5. When needed, medical units were difficult to locate. Though they were present on the incident scene. Had there been a true emergency need, there may have been a delay in treatment. Emergency medical task units should be set up primarily in a location established by Command. The location should be announced over the fire ground channel. There also should be medical personnel with EMS equipment on the staging floor as well as medical people in the rehab area.

6. Debris was tossed out the eighth story windows with little arrangement for the uncontrolled flying debris. Although the dangerous area was cordoned off later in the incident, this is an area that should be addressed on the Safety Officer's check list of tasks.

7. Aerial ladder and tower operators must be in full protective clothing while on the turntables and buckets in case they are suddenly exposed to fire products or flying debris.

8. There was a gross lack of fire fighter accountability at this fire. There was no control over who entered the building and the fire area. There presently is no system in Montgomery County for personnel safety accountability. There needs to be a way to account for the location and disposition of all fire fighters. Additionally, it is important for some one to keep track of duration of time when fire fighters are using SCBA. A system must be set up as soon as possible to prevent a loss of one of our people.

9. One officer was appointed to supervise the two major sectors of interior staging and fire floor operations. This officer was stationed on the staging floor, too far from the fire operations, to be effective. Many fire crews completely bypassed the interior staging sector and went right to the fire floor causing a lack of accountability. There should be a person assigned to each of these tasks immediately. These functions of the command system allow the Incident Commander to break down the tasks needed to control the fire into more manageable modules. These two sectors will probably feedback more important information to the Incident Commander than any other staff function.

10. All stairwells should be opened from the top immediately to provide fresh air circulation and allow the fire fighters and exiting occupants a safe haven from the fire's smoke and gases. This important task should preferably be assigned as a Standard Operating Procedure (SOP), or be assigned specifically by the Incident Commander immediately as operations begin. In addition to providing a means for natural ventilation to occur, the stairwells should be pressurized as soon as possible.

WELFARE FOR OPERATIONS PERSONNEL

1. There was no central rehab area where fire fighters were directed to go after completing tasks. Fire fighters were using the fire operations staging area two floors below the fire floors. This has a tendency to cause confusion in the staging sector since it is not obvious who is physically ready for assignment to another task. Fire fighters should be forced to go to a central area where they may receive liquids and food, medical monitoring, and rest. Rehabilitation sectors should be a division of the Safety Sector. The safety officer would be responsible for establishing appropriate logistics needed to provide rehab and other health considerations.

2. Fire fighter safety and welfare should receive clear direction in a section of the high rise SOP. These important areas should not be left to chance.

BUILDING

1. The lack of sprinkler protection in this building allowed the fire to reach flash over stage and then extend up to next floor. The safest and most efficient means to deal with the fire problem in high rise buildings is to have full sprinkler protection.

2. Plaster walls completely limited horizontal fire spread. This durable construction feature also made it possible for the fire crews to advance safely down the hall ways with limited exposure to the fire's heat and gases.

3. Complete lack of rear access caused problems in feed back information to the incident commander. One suggestion would be to assign a crew to enter an apartment and go to the balcony to survey the rear and then provide a condition report to the Incident Commander. The main issue here remains that someone must observe conditions in the rear of the building and feedback that information to the incident commander.

ACCESS

1. Problems developed with residents evacuating. A large crowd of people gathered in the lobby making access for fire fighters difficult. Some other means should have been provided for

these people in regard to where they congregated. One suggestion would be to move the evacuees to another building. It should be noted that lobby control should be initiated by the fire department. The lobby is a very effective spot for the primary or a secondary command post and the lobby control officer can establish this sector. Lobby control will further control access to the building by incoming fire crews, thus allowing a higher level of accountability. Lobby control must be addressed in a high rise SOP.

2. A person should be assigned as an occupant control agent. This person could be a police officer, Red Cross agent etc. They could be given a Position Activity checklist which describes their tasks.

3. Knox box keys were not functional on all doors. It should be noted that the fire department must check the knox box keys at least once a year to be sure the keys are still functional. The fire department has the only access to the inside of the knox box. If there is a problem with the keys, we frequently have no one to blame but ourselves.

4. All task groups on the fire ground should have entry tools. Entry tools should consist of at least Rabbit tool and Haligan bar or a K tool and Haligan bar.

5. One fire officer indicated that when he entered the elevator at the lobby level that there was an odor of smoke in the elevator. Though the elevator was used by the officer with no ill effects, it is recommended that elevators not be used when there is any evidence of smoke in them. Upon entering an elevator at a high rise incident, a member of the crew should shine a strong beam of light up into the elevator hoistway, through the space between the car and the hoistway, to see if there is any smoke present in the hoistway. If smoke is present in the hoistway the plan for using the elevator to access upper floors must be abandoned in favor of the safety provided by the stairwell. Furthermore, it should be standard procedure, to have forcible entry tools with the crew in the elevator in case the elevator car stalls. The tools would be necessary to begin self rescue procedures.

WEATHER

1. Weather did not play any significance. Temperatures were cool and winds light.

LOGISTICS and SUPPRESSION AGENTS

1. Water supply to the building was adequate.

2. There were four attack lines of 1-3/4' and 2", employed with an approximate available flow of 600 - 700 GPM at one time. Despite the good flow availability, there was a difficult time getting the fire to blacken down. Crews indicated a tremendous amount of heat and a difficult time making it into the apartment. Due to the apartment's arrangement it was difficult for the fire crews to advance into the apartment to get to the seat of the fire. A good deal of the fuel was blocked from clear access to the door by a partition.

3. There were indications from the attack crews that once the two initial lines were advanced to the entrance door, they would go no further. It was unclear whether this was caused by the inability to advance the excess line, or if in fact the line was completely advanced to the point that there was no more line. If the hose lines were physically too short than it should have been extended with an extra section of hose. This is a common high rise problem and should be practiced periodically. The problem with kinks and entanglement is another problem entirely. The company officer is tactically responsible to make sure the attack line is properly advanced into the apartment so that water can be applied to the seat of the fire. Attack lines must be advanced in such a way that kinks are eliminated, and that the line is not tangled and knotted. Again, periodic practice is a must.

4. The standpipe pack must contain a few appliances and tools for the standpipe system and hose, including: spare valve operating wheel, 10" crescent wrench and appropriate spanner. One crew encountered a missing hand wheel on the 10th floor center riser. They fortunately had a spare wheel in their pack.

PERSONNEL

1. In regard to personnel resources, a working fire in a residential high rise would warrant an immediate request for an equal complement of people to a third alarm. The Incident Commander attempted to provide this tactical build up of resources but was unable to quickly carry it out because of the failure of the CAD system. One basic disadvantage to requesting the equivalent to three separate alarms is that, ECC must presently set up the dispatch consecutively as opposed to one massive dispatch.

One way of providing a mass resource response is to develop a standard response which could be requested when a working high rise fire is evident. If the Incident Commander or first arriving officer were able to request a massive build up, we could see a reduction of the trickle-in affect of resources, and could therefore be able to make an aggressive attack with multiple lines and provide the necessary support such as checking the welfare of

occupants.

COMMUNICATIONS

1. Obviously communications were a major negative impact at this fire. The failure of the two important CAD features added to the complexity of the incident. Its failure affected the Incident Commander's ability to break the incident down into more manageable units and thus required personnel to use the radio more often than would normally be necessary. Radio traffic can be reduced by the use of Sectors. Sectors also reduce the span of control and puts the personnel in closer contact with supervision, reducing the need to use radios. Sectors were under utilized at this fire.

2. ECC staff had a major task facing them with the failure of CAD while still needing to run the communications end of this major fire. While it is obvious that there will not be a major overload frequently enough to justify extremely high staffing levels, it is clear once more that five personnel are the essential minimum. It is also evident that there needs to be some contingency plans developed for break downs, problems, peak overload times and major incidents. Such provisions as staff recalls and adjunct staff are some areas to explore. One other possibility which could be explored is to use a fire company to come to ECC to assist with some of the functions during peak periods.

3. Crews and personnel who are in possession of radio equipment must be aware that they are the eyes and ears of command. Without good information the incident commander cannot make timely and effective decisions. Personnel must be aware of their use of portable radios. Many inquiries to portable radios from Command went unanswered. In addition there were many messages to Command which were unclear as to what the message was. More care must be taken when transmitting messages.

4. Ventilation and EMS Sectors were placed on alternate channels later in the fire. This task no doubt assisted with a reduction of message traffic on the main channel.

5. Incident Commanders must manage radio frequencies used for field operations. ECC should not be used to constantly monitor the alternate channels because of inadequate staff levels. Unit to unit radio operations is appropriate for alternate channel radio use and is mandated in the Fire/Rescue Communications Manual. When there is a need to talk to ECC use the primary dispatch channel.

PRE-EMERGENCY PLANNING

1. There is no Pre-Emergency Plan for 10201 Grosvenor Lane. However, plot and floor plans as well as area maps were available. The Incident Commander indicated that he did not seek full use of the available resources for looking at the building lay out.

STANDARD OPERATING PROCEDURES

1. There is no SOP for high rise buildings in the County. This fire has shown that there is merit in having some tasks pre determined. With standard tasks in place there are less tasks which must be assigned by the Incident Commander.

2. Certain standard procedures and tactics for fire fighting operations were not followed, such as, exposure coverage, crews failing to have the appropriate tool to accomplish their task, etc.

ORGANIZATION

1. In regard to command function, the Incident Commander identified command and maintained it throughout the incident. The command post was not identified, and no command vests were issued to identify the staff. The fire ground was not well organized. The lack of organization stemmed partly from the failure of the CAD and the other part due to a failure to follow the County's incident command procedure. The incident commander could have avoided many of the organizational problems if he had reviewed and followed the guidelines of the Position Activity Card Provided in the Command Procedure.

2. Fire ground command organization is not practiced on a day-to-day basis. If the guidelines are followed on a regular basis it would be second nature on large scale incidents. Even on simple incidents, sectors can be established as practice for the major incidents. If the procedure is not practiced on a regular basis, the system will not function properly when it is really needed.

ACCOUNTABILITY

1. Accountability could not and did not function well partly because of the failure of CAD and partly because of inadequate command implementation. SAFETY AND ACCOUNTABILITY are direct benefits of the presence and use of strong command.

2. Implementation of a structured high rise operations SOP would direct much of the needed tactical functions which are greatly needed at a high rise fire.

This fire was a challenge in that it had reached the complete

flash-over stage. The magnitude of the fire and delay of alarm, provided a well entrenched fire by the time the Department arrived.

The high heat conditions demanded dogged perseverance to prevail over the fire. This was one of those fires which required the initial attack crews to suffer physically just to get into the apartment and to the seat of the fire. Later in the fire, there was a problem with vertical fire spread to apartment 914. This exposure also progressed to the flash over stage and required an aggressive attack to control.

SPECIFIC RECOMMENDATIONS

This fire pointed out significant problems which require addressing. The following are some of the more important problems which should be addressed and include:

1. Make the needed changes to the CAD so that it will not fail at peak impact moments. The Fire and Rescue Services in Montgomery County hang a tremendous amount of dependence on the effectiveness and reliability of the dispatch system. This fire and other incidents have pointed out that during peak demand, the Computer Aided Dispatch system is not able to hold its own. Having the possibility of a crash during a major incident in the subconscious mind of the dispatchers and the command officers could create unnecessary stress. A failure to improve this vital system could lead to the harm of our citizens and our Fire and Rescue personnel.

2. There clearly needs to be a specific Standard Operating Procedure for high rise fires. There is a great deal at stake in these fires and they cannot be treated in the same way as a common structure fire. High rise fires are special events. Additionally, there should be a provision for the fast build up of resources for high rise fires. Time is a critical factor and it cannot be wasted at one of these fires without the operation suffering. We need a bunch of people and equipment on the scene and ready to go in a hurry.

A standard procedure needs to be developed which provides for a quick build up of groupings of apparatus, such as task forces, to be assigned to specific tactical functions. An example of this may be as follows: a task force assigned to fire attack at a difficult fire, a task force assigned to ventilation, a task force assigned to search and/or evacuation, etc. Realizing that this is a departure from our present operating procedure, it will require a group of knowledgeable people to work out the details. A work group for such a task should be comprised of two dispatch people, two command level officers, and two company officers. The people in the work group should have active highrise

fire fighting experience. A consensus recommendation shall be included in the SOP for high rise incidents, as well as communicated for other incident use.

3. We need to demand that anyone preparing to engage in fire fighting operations in a high rise, use 60-minute SCBA. It is a terrible waste to have the attack crew finally become positioned at the point of attack and be required to leave because of being out of air. There is also the danger that the 30-minute mask will allow the fire fighter to travel further into the building than he can safely depart. This could require the fire fighter to exit on low air levels or no air, within a hostile respiratory environment.

4. We need to gain access immediately to the apartment above the fire. The apartment over the fire apartment is where the fire will be heading as it reaches flash over, as well as where occupants can become trapped. A crew of fire fighters must obtain access and then stay in this exposure apartment until there is no further danger of fire spread, and thus dismissed by the Incident Commander. If someone had opened up the door to apartment 914 that act in itself could have created enough ventilation pressure and cool fresh air to prevent exposure fire and products to accumulate. Furthermore, at that time the balcony doors could have been closed to block the flow of gases.

5. One crew should go immediately to the roof to provide vertical ventilation of all stair towers and the elevator hoistway. It must be remembered that the roof could be well secured. With this in mind the roof crew should carry appropriate access tools and knox box keys. Bottom line, access must be gained to the roof for stairwell ventilation. Lives of occupants and fire fighters depend upon this task. Persevere on the tough entry and access problems to the roof and keep the Incident Commander apprised of success or lack of success.

6. There should be a meeting held with the occupants of the building to provide a learning experience from this fire. The meeting should present a number of topics including:

1. How they should react to a fire when it is in their apartment and when it is elsewhere in the building.
2. The need for better detection systems and the need for residential fire sprinklers.
3. Provide the residents a description of our job so they understand the impact of their actions in a positive and negative way.

4. A factual rundown of what occurred at the fire.
This eliminates any bias they may have based upon rumors they heard.

APPENDIX

The following text represents a chronological rundown of events at the Grosvenor Lane fire. These events were extracted from the running audio tape provided by the Emergency Communications Center.

<u>TIME</u>	<u>EVENT</u>
0112	Dispatch of box in high rise apartment house. E-201 on the scene. RS-18 reports heavy smoke from the building. ECC advises Duty 6 of people needing assistance. Chief 200 establishes Command 20. Told that E-201 reporting working fire.
0119 Operations	ECC announces the establishment of Command 20, and moves radio communications to Fire Ground Channel 1.
0121	Command 20 requests a 2nd alarm and a task force to stage on Rockville Pike. Command requests a run down of the 1st alarm assignment. ECC provides this. E-261 advises light smoke conditions on the floor above the fire (9th floor) and asks for center stairwell to be opened. T-26 advised to do this. The operator of E-201 reports that a passer-by advised of a secondary fire from falling flaming debris. ECC advises the occupants in Apt. 802 and 804 need

assistance. Command directed E-51 to check Apts. 802, 804 and 809.
Command requests the fire apartment number from Portable E-201. No answer.

Command requests run down of 2nd alarm units from ECC. ECC advises that CAD has gone down. Command advises he needs a list of 2nd alarm units and the units presently in Level Two Staging. ECC advises stand-by.

TIME	EVENT
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0121 (cont.)	ECC advises of a stroke patient in the stairwell between 13th and 14th floor. Command advises to send the first due unit on the 2nd alarm to that location, and to identify that unit. ECC sends E-511 on this task.
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0133	Command advises ECC to send all 2nd alarm units to 6th floor and report to the interior staging officer. They are to take extra SCBA cylinders. AT-20's OIC reports part of his crew is missing; last seen on the fire floor. Interior staging advises AT-20 that the crew member is on the 6th floor changing his SCBA cylinder.
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0138	Command requests list of EMS units on the incident. ECC advises Medic 10 and Ambulance 40. Command requests another Medic Unit and another Ambulance. Command reports that Chief 5 will handle EMS units. ECC reports the need for a truck to the balcony of Apt. 804. Command says to send a truck from staging to do this and to replace the truck in staging. Also advises to put EMS units on EMS 1 with Chief 5. ECC inquires for "the tower that was dispatched on the 2nd alarm". Tower 23 answers. They are sent to the balcony of Apt. 804.
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Command asks for the task force from staging to be

put
at
never
to

sent to the fireground and another task force be in Level 2 staging. (Command did not realize it the time but the task force he requested was provided. Therefore, there was no task force request, thus imposing a time lag for the replacement of resources).

force;

Command asks for the command unit in charge of the task force. ECC asks for the command officer in charge of the task force. No answer; no task force commander.

Command advises that Chief 5-3 will be taking the task force to the fire floor to begin relieving personnel.

TIME	EVENT
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0138 (cont.)	ECC explains that the CAD went down when the 2nd alarm was being transmitted. Command wants to know who is on the task force. ECC says E-111, T-11 from Station 6. Command tells ECC to assign them to Chief 5-3 on the 6th floor to begin relieving units.
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Command also sends E-31 to the 6th floor.

Chief 3-2 advises on Side 3 that there is fire on the balconies of floors 5, 6, 7 and 8.

0149	Command requests the command bus, a third alarm and another task force to staging. Assigns them to floors 4, 5, 6, and 7.
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E-511 assigned to the 7th floor to extinguish the fire on the balcony.

Command advises Chief 5-3 not to relieve crews but rather to commit crews to fires on floors 4, 5, and 6. Chief 5-3 to coordinate those floors.

Chief 3-2 (on Side 3) reports to Command that the apartment above the original fire apartment is now fully involved. RS-18 advises they are available for tasks on floor 9. T26 advises available for tasks. Command sends them to the 9th floor to

work

with E-191, also to put ladder on 9th floor.

Chief 3-2 (on Side 3) advises that fires on floors 6 and 7 are taken care of. Fire on floor 8 is reported under control and the fire on the 9th floor is fully involved.

Command attempts to contact "Interior" or any units on the 8th floor. Chief 5-3 taking units to the 9th floor.

Command asks what is in staging. ECC asks for a roll call of units in staging. No answer.

E-51 at door of Apt. 914 with t-19 and running out of air. Command advises that E7-1, E-111, and T-11 are proceeding to apt. 914. (NOTE: E-51 had 1 hour masks and are now needing a bottle change.)

0159

Command inquires of ECC if there are any units in staging. No response received.

Chief 3-2 (on Side 3) advises that there is a good Knock down of Apt. 914.

THE FIRE IN APARTMENT 814

*Additional
Thoughts*

Viewing the video of this fire and speaking to the initial attack fire fighters, indicated that fire fully involved the apartment. The video showed a post-flashover condition with long, dark flames traveling out the window and up the building at least one story. The dark red color of the flames indicate the venting of hot unburned vapors. Due to the confinement within the unit, the pressure of the gases could not be contained in the fire apartment and thus vented through a convenient opening, the windows. The gases and vapors will burn independently of the main flammable vapor generation point. Collection of the flammable vapors in the flame stream, as well as the available heat and oxygen allowed the fire to extend to unburned areas. It can be assumed by construction characteristics and features, that the building, itself, did not contribute to the fire load¹ of this incident. Using scenario factors from typical highrise residential occupancies, we can assume that the unit had an average fuel load of 4 - 6 pounds per square foot. For purposes of calculating the BTU output of this fire, we would assume a combination of natural fuel, at 8,000 BTU per pound and plastic fuel at 16,000 BTU per pound. For the sake of example we will look at the flow requirement for the least severe fire with only natural combustibles. A formula is displayed below to show this heat scenario as well as the required flow to absorb the BTU's produced.

Bear in mind that this is a controversial rule of thumb, but can give us an idea of what might needed in the way of fire flow to absorb the generated BTU's.

$$4 \times 8,000 \times 668 = 21,376,000 \text{ total BTU}$$

4 = average fuel load per sq ft residential high rise
8,000 BTU = heat output of 1 lb of ordinary combustibles
668 = the square foot area of the fire apartment
21,376,000 = BTU total in this fire (that which must be absorbed by water)

If we consider that one gallon of water, when converted to steam, absorbs 9350 BTU's it would take a 10 minute flow of 250 gallons of water, per minute, to control the fire. Can we, with any assurance say that we were able to flow this amount of water from our two 1 3/4" lines? Knowing that we were not able to get to the seat of the fire right away, and that there were probably some

¹Fire Load - is the potential fuel available to the fire. It is broken down into the type of combustible. For wood and paper and similar materials 8000 BTU per lb. can be expected. Many plastics, flammable liquids, etc., can be expected to emit 16,000 BTU per lb. "Building Construction for the Fire Service", 2nd ED Francis L. Brannigan

kinks which reduced flow, we were probably operating from an inefficient attack stance. Add to this that we may have had twice the BTU out put as described above and we can see that we had a hot fire to contend with.